Claims

1. Tool for cutting materials comprising a rotatable body with a rotation axis (L) and cutting edges (10) for cutting the material during movement of the body in a first direction parallel to the rotation axis characterised in that the cutting edges (10) comprise inner cutting edges (14) laying on a first surface of revolution which is in the first direction higher at a larger diameter and lower at a smaller diameter.

2. Tool according to claim 1 wherein at a diameter larger than the inner cutting edges (14) outer cutting edges (12) are laying on a second surface of revolution which is in the first direction lower at a larger diameter and higher at a smaller diameter.

3. Tool according to claim 1 or 2, wherein the inner cutting edge extends essentially to the centre of the tool.

4. Tool according to any of claims 1 to 3, characterised in that the outer edge extends substantially to the outer diameter of the tool.

5. Tool according to claim 2 or claim 3 or 4 inasfar as dependent on claim 2, wherein the first surface and the second surface intersect at a circle and the inner cutting edges (14) and the outer cutting edges (12) extend to this circle.

6. Tool according to claim 5, wherein the circle has a diameter of at least half of the maximum diameter of the outer cutting edges (12).

7. Tool according to claim 5 or 6, wherein the diameter of the circle falls in the range from between 0.5 D and 0.9 D, preferably between 0.6 D and 0.8 D and in particular between 0.74 D and 0.78 D, wherein D is the diameter of the tool.

8. Tool according to claim 2 or any of claims 3 to 7 inasfar as dependent on claim 2, wherein the first surface and/or the second surface are a cone.

9. Tool according to claim 8, wherein the cone angles (α_2, α_1) are both larger than 65°, preferably larger than 75° and in particular between 77° and 87°, the most preferred angles falling within the range from 79° to 82°.

10. Tool according to claim 8 or 9, wherein the top angle (α_2) of the cone of the first surface and the top angle (α_1) of the cone of the second surface are approximately equal.

11. Tool according to claim 2 or any of claims 3 to 10 inasfar as dependent on claim 2, wherein the transition from the first cutting edge to the second cutting edge occurs along a rounded tip portion having a radius r of curvature from between 0.1 mm and 2 mm, preferably 0.2 mm to 0.5 mm.

12. Tool according to any one of the previous claims, wherein near the cutting edges (12) the rotatable body is provided on its outside circumference with support planes (8) laying in an approximately cylindrical surface being parallel to the rotation axis (L).

13. Tool according to any one of the previous claims, wherein an inner cutting edge (14) and an outer cutting edge (12) form a cutting tooth (5).

14. Tool according to claim 13, wherein the support planes (8) are located on the cutting teeth.

15. Tool according to claim 13 or 14, wherein the tool (1) has at least two and preferably four cutting teeth (5).

16. Tool according to claim 15, wherein the tips (13) of the different cutting teeth are located on the same circle about the centre of the tool.

17. Tool according to any one of the previous claims, wherein the tool (1) is provided with a shank (4) for fastening the tool in a clamp (2) of a machine tool, the shank having a length such that the distance between the clamp and the cutting edges (10) is at least four times the diameter (D) of the cutting edges.

18. Method for machining material using a tool according to one of the previous claims, whereby the tool is rotated and in a first movement moved in the direction of its rotation axis (L) into the material, retracted, moved a step-distance (S_D) in a direction perpendicular to its rotation axis and in a next movement moved in the direction of its rotation axis into the material, thereby cutting a sickle-shaped section of material characterised in that the step-distance (S_D) is such that the volume machined by the inner cutting edges (14) from the sickle-shaped section of material is approximately equal to the volume machined by the outer cutting edges (12).

19. Method for machining material using a tool according to one of the previous claims, whereby the tool is rotated and in a first movement moved in the direction of its rotation axis (L) into the material, retracted, moved a step-distance (S_D) in a direction perpendicular to its rotation axis and in a next movement moved in the direction of its rotation axis into the material, thereby cutting a sickle-shaped section of material characterised in that the step-distance

(S_D) is such that any moment at least two inner cutting edges (14) are cutting the sickle-shaped section of material.